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009/016

SEP 13 2006

Receq No. 501.43145X00
Serial No. 10/663,645
Office Action Dated: June 13, 2006REMARKS**I. Introduction**

By the present Amendment, claims 1 and 5 – 10 have been amended, and claim 3 canceled. Claims 17 – 19 are newly presented for consideration. Accordingly, claims 1, 2, and 4 – 19 are now pending in the application. Claims 1 and 10 are independent.

II. Office Action Summary

In the Office Action of June 13, 2006, claims 1 – 4, 6, and 8 – 16 were rejected under 35 USC §102(e) as being anticipated by U.S. Patent Application 2003/0011545 to Sagano, et al. ("Sagano"). Claims 5 and 7 were rejected 35 USC §103(a) as being unpatentable over the Sagano in view of U.S. Patent 6,291,942 issued to Odagiri, et al. ("Odagiri"). These rejections are respectfully traversed.

III. Rejections Under 35 USC §102

Claims 1 – 4, 6, and 8 – 16 were rejected under 35 USC §102(e) as being anticipated by Sagano. Regarding this rejection, the Office Action alleges that Sagano teaches a display apparatus that comprises a display unit having a plurality of display elements arranged in a matrix, a drive voltage generating circuit for generating a voltage to drive the plurality of display elements, a data line drive circuit for generating a signal voltage according to a display data for controlling the amount of current in a supply line of the drive voltage. The Office Action further alleges that Sagano discloses a scanline drive circuit for selecting one or more of the plurality of display elements to be driven, and a control circuit for controlling the time period of light emission for each display element. Applicants respectfully disagree.

Docket No. 501.43145X00
Serial No. 10/663,645
Office Action Dated: June 13, 2006

As amended, independent claim 1 defines a display apparatus that comprises:

- a display unit including a plurality of display elements arranged in a matrix;
- a drive voltage generating circuit for generating a drive voltage for driving said plurality of display elements;
- a dataline drive circuit for generating a signal voltage according to display data, said signal voltage being for controlling the amount of current in each display element;
- a scanline drive circuit for selecting one or more of said plurality of display elements which is to be applied said signal voltage;
- a control circuit for controlling a light emission time period in one frame period of each display element according to a distance measured along a supply line on which said drive voltage is supplied from said drive voltage generating circuit to said each display element;
- wherein each display element comprises an emission element, capacitance element for storing charge corresponding to said signal voltage when said display element is selected by said scanline drive circuit, a drive element for flow through said emission element current according to said charge in said capacitance element, and switch element coupled between said emission element and said drive element, and
- wherein said switch element switches flowing or not through said emission element said current based on a control signal according to said distance to control said light emission time period in one frame period.

According to the display apparatus of independent claim 1, a display unit is provided with a plurality of display elements arranged in a matrix. A drive voltage generating circuit is used to generate a drive voltage for driving the plurality of display elements, and a data line drive circuit is used to generate a signal voltage according to display data. The signal voltage is used for controlling the amount of current in each of the display elements. A scanline drive circuit is used to select one or more of the display elements to which the signal voltage is to be applied. A

Docket No. 501.43145X00
Serial No. 10/663,645
Office Action Dated: June 13, 2006

control circuit is used to control the light emission time period in one frame period of each display element according to a distance measured along a supply line on which the drive voltage is supplied to each display element from the drive voltage generating circuit.

According to independent claim 1, each display element includes an emission element, a capacitance element for storing a charge corresponding to the signal voltage when the display element is selected by the scanline drive circuit, a drive element for supplying current to the emission element according to the charge in the capacitance element, and a switch element coupled between the emission element and the drive element. Further, the switch element selectively supplies current to the emission element based on a control signal according to the distance to control the light emission time period within a signal frame period.

At least one benefit achieved by independent claim 1, is the ability to provide the control signal according to the distance measured along the supply line for the drive voltage, which does not depend on the display data. Additionally, the control signal is different from the drive voltage. The light emission time period in one frame period of the display element is subsequently controlled by turning the display element on or off based on the control signal.

The Office Action alleges that Sagano discloses the features of the claimed Invention. Sagano appears to disclose an image display apparatus capable of correcting the voltage drop resulting from the electrical resistance of the wirings. Sagano utilizes adjustment data to correct the influence of the voltage drop which results from the electrical resistance of the row wirings and gray scale number converting means. Sagano controls the light emission time based on a pulse width modulated (PWM) signal resulting from modulation of the voltage (V_f) to the device.

Docket No. 501.43145X00
Serial No. 10/663,645
Office Action Dated: June 13, 2006

The modulation performed by Sagano is also dependent on the magnitude of the image data. See paragraphs [0065], [0071], and Abstract of Sagano. Thus, Sagano utilizes a pulse width modulated signal in accordance with the magnitude of the image data in order to control the light emission time of the pixel. Sagano utilizes the voltage drop resulting from the electrical resistance of the row wiring to control the light emission time of the pixel. Further, Sagano adjusts the image data in order to control the light emission time of the pixel.

In contrast, the claimed invention utilizes the signal voltage corresponding to the display data in order to control the current flowing through the display element. Sagano does not appear to provide any disclosure or suggestion for features recited in independent claim 1 such as:

a control circuit for controlling a light emission time period in one frame period of each display element according to a distance measured along a supply line on which said drive voltage is supplied from said drive voltage generating circuit to said each display element;

wherein each display element comprises an emission element, capacitance element for storing charge corresponding to said signal voltage when said display element is selected by said scanline drive circuit, a drive element for flow through said emission element current according to said charge in said capacitance element, and switch element coupled between said emission element and said drive element, and

wherein said switch element switches flowing or not through said emission element said current based on a control signal according to said distance to control said light emission time period in one frame period.

It is therefore respectfully submitted that, as amended, independent claim 1 is allowable over the art of record.

Claims 2, 4 – 9, and 17 – 19 depend from independent claim 1, and are therefore believed allowable for at least the reasons set forth above with respect to

Docket No. 501.43145X00
Serial No. 10/663,645
Office Action Dated: June 13, 2006

independent claim 1. In addition, these claims each introduce novel elements that independently render them patentable over the art of record.

Independent claim 10 defines a display apparatus that comprises, in part:

wherein a light emission time period of each display element varies according to a location of said each display element;

wherein each display element comprises an emission element, capacitance element for storing charge corresponding to said signal voltage when said display element is selected by said scanline drive circuit, a drive element for flow through said emission element current according to said charge in said capacitance element, and switch element coupled between said emission element and said drive element, and

wherein said switch element switches flowing or not through said emission element said current based on a control signal according to a distance measured along a supply line on which said drive voltage is supplied from said drive voltage generating circuit to said each display element, to control said light emission time period in one frame period.

According to independent claim 10, the light emission time period of each display element varies according to the location of such display element. Each display element includes an emission element, a capacitance element for storing charge corresponding to the signal voltage when the display element is selected by the scanline drive circuit, a drive element, and a switch element coupled between the emission element and the drive element. Furthermore, the switch element selectively allows current to flow to the emission element based on a control signal in accordance with a distance measured along the supply line on which the drive voltage is provided. This is also used to control the light emission time period in one time frame period.

As previously discussed with respect to independent claim 1, Sagano appears to provide a display apparatus that utilizes pulse width modulation and adjustment data to correct the influence of voltage drops resulting from resistance

Docket No. 501.43145X00
Serial No. 10/663,845
Office Action Dated: June 13, 2006

along the row wires. Sagano does not appear to provide any disclosure or voltage for features recited in independent claim 10 such as:

wherein a light emission time period of each display element varies according to a location of said each display element;

wherein each display element comprises an emission element, capacitance element for storing charge corresponding to said signal voltage when said display element is selected by said scanline drive circuit, a drive element for flow through said emission element current according to said charge in said capacitance element, and switch element coupled between said emission element and said drive element, and

wherein said switch element switches flowing or not through said emission element said current based on a control signal according to a distance measured along a supply line on which said drive voltage is supplied from said drive voltage generating circuit to said each display element, to control said light emission time period in one frame period.

It is therefore respectfully submitted that independent claim 10 is allowable over the art of record.

Claims 11 – 16 depend from independent claim 10, and are therefore believed allowable for at least the reasons set forth above with respect to independent claim 10. In addition, these claims each include novel elements that independently render them patentable over the art of record

IV. Rejections Under 35 USC §103

Claims 5 and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sagano in view of Odagiri.

As previously discussed, independent claim 1 recites features that are not disclosed by Sagano. These features are also not disclosed or suggested by Odagiri. Therefore, independent claim 1 is believed to be allowable over the

Docket No. 501.43145X00
Serial No. 10/663,645
Office Action Dated: June 13, 2006

combination of references. Claims 5 and 7 are also believed to be allowable based at least on their dependence from independent claim 1.

V. Conclusion

For the reasons stated above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a Notice of Allowance is believed in order, and courteously solicited.

If the Examiner believes that there are any matters which can be resolved by way of either a personal or telephone interview, the Examiner is invited to contact Applicants' undersigned attorney at the number indicated below.

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016/016

SEP 13 2006

Docket No. 501.43145X00

Serial No. 10/663,645

Office Action Dated: June 13, 2006

AUTHORIZATION

Applicants request any shortage or excess in fees in connection with the filing of this paper, including extension of time fees, and for which no other form of payment is offered, be charged or credited to Deposit Account No. 01-2135 (Case: 501.43145X00).

Respectfully submitted,

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